BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Skype Communications S.A.R.L.	)	RM-11361
	)	
Petition to Confirm a Consumer's right to Use Internet Communications Software and Attach Devices to Wireless Networks	)	

ALCATEL-LUCENT REPLY COMMENTS

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May 15, 2007

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Executive Summary

Skype Communication S.A.R.L. ("Skype") Petition for Declaratory Ruling ("Petition") is misplaced and misconstrues the intent of the Federal Communications Commission's ("Commission") *Carterfone* decision. Applying the *Carterfone* principle, intended for a monopoly market, to the competitive wireless broadband industry would stifle investment and innovation in network infrastructure and slow down the rapid standards process which provides the structure for the deployment of wireless broadband.

The wireless broadband market is nascent with significant investment and innovation at every layer of the network. The above mentioned standards processes have produced swift advances in the capabilities of wireless networks to respond to the continuously developing and demanding end-user wireless market. Hence, the duplicative standards mechanism Skype proposes for the market for 3G applications is unnecessary.

While *Carterfone* effectively introduced competition into the Customer Premise Equipment ("CPE") market on wireline telephone networks, the inherent differences between wireline and wireless networks renders applying the *Carterfone* principle to wireless networks unworkable both technically and as a business case. Competition today exists in the wireless broadband marketplace. Thus, the Commission must refrain from

authorizing any new regulations that may impede innovation at any layer of wireless networks.

For the reasons set forth herein, Alcatel-Lucent urges the Commission to deny Skype's Petition creating an unwarranted new regulatory mandate governing competitive wireless networks.

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ALCATEL-LUCENT'S REPLY COMMENTS IN OPPOSITION OF THE SKYPE PETITION FOR DECLARATORY RULING

Alcatel-Lucent ("ALU")[1] respectfully submits the instant comments in the above-captioned proceeding currently before the Federal Communications Commission ("Commission").[2] In its Petition for Declaratory Ruling ("Petition"), Skype Communications S.A.R.L. ("Skype") seeks to establish regulations via the *Carterfone* Principle whose application today in the vibrant wireless broadband market-place is misplaced. Applying yesterdays

[1] Alcatel and Lucent Technologies, Inc., two leading global telecommunications equipment manufacturing companies, merged on November 30, 2006 to create ALU. As a leader in fixed, mobile and converged broadband networking, IP technologies, applications, and services, ALU operates in more than 130 countries and has the most experienced global services team, as well as one of the largest research, technology and innovation organizations, in the telecommunications industry. ALU provides solutions that enable service providers, enterprises and governments worldwide to deliver voice, data and video communication services to end-users and achieved adjusted pro forma revenues of Euro 23.9 billion dollars in 2006.

[2] Petition to Confirm a Consumer's Right to Use Internet Communications Software and Attach Devices to Wireless Networks, SKYPE Communications S.A.R.L., RM-11361 (filed Feb 20, 2007) ("Skype Petition").

monopoly regulation of yesterday will not facilitate robust competition in the wireless market-place because it currently exists today.

As set forth more fully herein, the wireless broadband market is a competitive industry, rapidly evolving and innovating at all layers of the network, with innovative business plans that provide products and services that consumers demand. Each segment of the market (access and service providers, equipment – infrastructure and devices - manufacturers, and applications providers) relies on innovation at all levels to provide new features for end-users.

The FCC must refrain from imposing any new regulations that might impede innovation at any layer of the wireless broadband network. Specifically, applying *Carterfone* principles, intended for a monopoly market, to the wireless broadband market would drive down investment in network infrastructure innovation and slow down the rapid standards process that is formalizing the technologies which permit wireless broadband.

I. *Carterfone* was Imposed on A Monopoly Entity To Boost Competition In A Marketplace That Bears No Correlation To Today's Competitive CMRS Market.

ALU agrees with various filers that the entire premise of Skype's Petition is based on a misplaced assumption that the Commission's 1968 *Carterfone* decision provides an appropriate regulatory regime for wireless. Neither the 1960s wireline telephone market failure addressed by *Carterfone*,

nor the regulatory regime it imposed to remedy competitive harms in the monopoly wireline customer premises equipment ("CPE") market, has any relevance to the wireless sector.

The Commission's *Carterfone* decision and its progeny were intended to remedy the market failure of the Bell System, a vertically integrated monopoly with control over the wireline network for local and long distance calls, as well as the adjacent end-user interface equipment market. *Carterfone* sought to increase competition in the wireline network by preventing carriers from restricting attachments to the network.[3]

In contrast to the 1960s monopoly telephone market, each segment of the wireless market (access and service providers, equipment – infrastructure and devices – manufacturers, and applications providers) vigorously competes to provide innovation at all levels of the wireless network to introduce new features for end-users. Skype's Petition asks "the Commission to initiate a proceeding explicitly to enforce its *Carterfone* policy" to the wireless industry,[4] but disregards the profound differences between today's

[3] *See* Comments of Qualcomm Incorporated at 4-5 ("Qualcomm"); Verizon Wireless at 48-49 ("VzW"); Motorola, Inc. at 5-6 ("Moto"); LG Electronics MobileComm USA at 1-2 ("LG"); AT&T Inc. at 25 ("AT&T"); United States Cellular Corporation at 2 ("USCC"); CTIA – The Wireless Association at 31-32 ("CTIA"); Sprint Nextel Corporation at 6, 19 ("Sprint").
[4] Skype Petition at 5.

competitive wireless industry and the 1968 landline telephone market, which consisted of a single, end-to-end service only available from one company.[5]

We concur with multiple filers in this proceeding that the *Eleventh Competition Report*, in which the Commission concluded "that there is effective competition in the CMRS marketplace,"[6] provides definitive evidence of robust competition in the wireless industry.[7] This competitive environment has spurred investment and innovation at all levels of the wireless network,[8] in addition to producing a variety of services and applications available through differentiated pricing plans to benefit consumer welfare.[9] The *Eleventh Competition Report* solidifies these filers' claims by concluding "that competitive pressure continues to drive carriers to introduce innovative pricing plans and service offerings, and to match the pricing and service offerings introduced by rival carriers."[10]

ALU also agrees that there is no vertical integration between wireless carriers and handset manufacturers, and that the wireless device market is

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[5] *See* VzW at 51-52; Moto at 2; LG at 2-4; Qualcomm at 4; AT&T at 5; USCC at 3; Sprint at 19-20; CTIA at 5, 32-35.
[6] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Eleventh Report; Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, 21 FCC Rcd 10947, ¶ 2 (2007) (*Eleventh Competition Report*).
[7] *See* LG at 3; Moto at 2-5; Sprint at 2-3; VzW at 8-10; CTIA at 5-8; AT&T at 13-15; USCC at 2-3; Qualcomm at 5-6, 9.
[8] USCC at 3; AT&T 5-9, 13-14; VzW at 8-9.
[9] VzW at 6-11; AT&T 9-10, 15, 20-21; USCC at 3; Moto at 3.
[10] *Eleventh Competition Report*, at 10950.

intensely competitive.[11] The goal that *Carterfone* and its progeny ultimately achieved – competition and innovation among equipment manufacturers – has already been reached in the wireless context. Thus, the Commission should not grant Skype's Petition to initiate a declaratory proceeding.

II. Applying *Carterfone* To Wireless Broadband Would Stifle Investment And Innovation In Network Infrastructure And Stall The Industry Standards Process That Facilitate Deployment Of 3G.

Wireless broadband is a nascent service in the United States that promises to offer additional consumer choice for Internet access. ALU wholeheartedly disagrees that "as carriers roll-out a third generation of wireless service,"[12] the Commission should adopt a monopoly-era regulatory framework to promote competition, establish a government inquiry into carrier practices, or create a redundant standards process duplicating a decade old standards regime.

The application of *Carterfone* principles, intended for a monopoly market, to the nascent, dynamic and emerging wireless broadband market would drive down investment in network infrastructure innovation and slow down the rapid standards process that is formalizing the technologies which permit wireless broadband.[13] A mandate that carriers allow any device to

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[11] *See* AT&T at 4-5, 10-11; LG at 2-3; Moto at 4; VzW at 11-15; Sprint at 4-5; USCC at 3; Qualcomm at 9; CTIA at 17-19, 33-38.
[12] Skype Petition at 5.
[13] AT&T at 33-36; Sprint at 23.

attach to their network is simply not sustainable in the wireless environment of competing air-interfaces.[14]

The existing wireless communications regulatory and business environment in the United States has supported the development of a strongly competitive industry that has enjoyed exponential subscriber growth. This growth has been supported in part by the ongoing development of wireless technical standards and the subsequent deployment of competing wireless infrastructures defined by those standards, together with innovative services made possible by the new technologies.[15] The Commission should approach any request to add another element to the standards process, an addition that might present barriers to further innovation, with great caution. Certainly, the Commission should deny any request that would introduce an element within the standards process that subverts the current policy of technology neutrality.

A. The Evolution and Innovation of 3G Air Interfaces.

The evolution and innovation of 3G air interface have been continuous in the wireless research community since 3G systems were standardized. The ITU has set guidelines for 3G systems in the IMT-2000 framework to support data rate 144kbps for high mobility and 2Mbps in a fixed location. Different 3G air interfaces such as cdma2000 and UMTS meet the IMT-2000

[14] VzW at 30; LG at 4; Moto at 6-7.
[15] *See* CTIA at Attachment C at 8-10, 21-25 (citing the *Eleventh Competition Report*, at 10950).

guidelines and, since the time of original standardization, have evolved to provide improved feature-functionality.

An example of this innovative environment is clearly evident in the development of standards for CDMA. These standards, defined and published through the industry organization identified as 3GPP2, show the rapid evolution of one of the major wireless technologies. The CDMA2000 standard was accepted by the ITU in 1998 as one of the technologies classified as IMT2000 or third generation (3G). This standard met the ITU's criterion for minimum 3G data rates, providing 153 kbps in a mobile environment. Third generation CDMA standards have evolved beyond their original capabilities to provide higher data speeds that will further enhance broadband services.

The CDMA 1X-EV DO (Evolution – Data Optimized) standard, completed in the year 2000, offers base station (forward link) transmission rates of up to 2.4 Mb/s, and supports services such as web browsing, download of large files, and video applications. EV-DO Revision A (REV A), developed in 2004, expands these capabilities to offer up to 3.1 Mb/s downlink transmission and up to 1.8 Mb/s for mobile transmit (reverse link), and supports low latency requirements for services such as Voice over Internet Protocol (VoIP).

The standard for REV B, completed in 2006, provides the flexibility of a multi-carrier format and particularly supports an initial capability for video

telephony. Finally, standard development for REV C, recently completed and now identified as Ultra Mobile Broadband (UMB), suggests the future deployment of wireless systems with capabilities – such as commercial video telephony – far beyond those associated with 3G. These systems employ techniques such as the use of multiple antennas along with improved spectral efficiency to provide still higher broadband data rates.

The competing UMTS system was standardized in 1999 and published by the industry group known as 3GPP in March 2000. It contained basic capabilities/services like Circuit Switched voice and data calls as well as packet bearers to connect to the public internet. Additionally, it provided value added features like Location Services, Short Message Service (SMS), Cell Broadcast (SMS-CB) etc.

Improved UMTS performance was offered in June 2002 in the form of High Speed Downlink Packet Access (HSDPA) and other features such as Intelligent Antenna (IA), as well as enhanced service capabilities provided with the initial phase of the IP Multimedia Subsystem (IMS), Wideband AMR, OSA enhancement, Global Text Telephony, and Location Services enhancements.

The main objectives of HSDPA were to achieve a substantial increase in average aggregate data rates, thus resulting in network capacity increase, plus an increase in peak throughputs (up to 14Mbps) and a reduction in latency in the downlink. Further UMTS improvements were released in

December 2004. Included were new service capabilities and improved uplink (UL) spectral efficiency, allowing UL peak data rates of up to 5.76 Mbps. The most recent version of the UMTS standard, published in March 2007, contains a number of important new features such as MIMO, CPC, Higher Order Modulation, etc. These features allow peak data rate to reach 28.8Mbps and increased the spectral efficiency of the UMTS air interface. In addition, work is going on an evolved new air interface under the Long Term Evolution (LTE) work item. This will be ready for Release 8 and it is expected to offer a data rate of 100Mbps in the DL and 50Mbps in the UL in 20MHz bandwidth.

B. The Aforementioned Progress In CDMA and UMTS Standards Supports The View That The Existing Standards Process Has Provided A Forum That Has Advanced The Capabilities Of The Wireless Industry.

In its Petition, Skype asks that the Commission "establish a mechanism to create technical standards that protect the Carterfone principle with respect to the market for applications that run on 3G Internet access networks."[16] Regardless of the ultimate resolution concerning the applicability of Carterfone to wireless networks, the need for such an industry led form is questionable. In fact, it would appear that a separate forum is duplicative of the current standards efforts and, therefore, unnecessary.

[16] Skype Petition at 31.

The evolution and innovation of wireless broadband air interface, driven by consumer demand for more data services and applications, have been continuous in the wireless research community since 3G systems were standardized. The need for improved spectral efficiency, network optimizations and new services has motivated continued enhancements of 3G, resulting in the rapid development of faster wireless broadband standards through global standard bodies. Additional motivation for wireless broadband service providers to innovate and provide more bandwidth efficient services and applications, lies in the inherent bandwidth capability differences between wireline and wireless broadband.

The current standards process has involved a broad range of technical issues, including air interface technologies as well as network operation and features. These standards organizations and their associated workshops are open to any and all participants, who can propose the use of technical interface arrangements subject to established procedures. Accordingly, application developers who are interested in identifying the most efficient methods to support their products in the wireless environment can and should bring their ideas and proposals to the appropriate industry group.[17]

III. Applying *Carterfone* To Wireless Carriers Would Inhibit Their Ability To Manage Traffic On Their Network, Resulting In Harm To Consumer Welfare And Expectations.

[17] VzW at 2.

Carterfone introduced the idea of competition in user-interface equipment attached to the wireline network, but it did not alter that nature of what was transmitted over the network.[18] In contrast, applying *Carterfone* to wireless networks would limit carriers' ability to manage that traffic running on its network. The Commission should be aware of the implications associated with the capability for unfettered access to any and all software applications over a wireless network. Surely, the Commission recognizes the limited nature of the spectrum resource available to a given carrier and its use as a shared medium for all subscribers of that carrier. Any one end user's application or service can therefore impact the level of service for all users. This is distinct from a wireline environment where the available bandwidth is many orders of magnitude greater than that available over the air and any one user's service application is less likely to impact the quality with which services can be provided to other users.

The wireless network requires that spectrum be obtained via auction by carriers with the understanding that the wireless technology and the associated protocols they deploy in their networks will provide the spectral efficiency (bits/sec/Hz) necessary to support a desired data rate and/or number of users. The introduction of an application that is inefficient in its use of spectrum, such as Skype's VoIP offering, can significantly reduce the overall spectral efficiency, requiring, an increase in the data rate (i.e.,

[18] USCC at 2.

number of bits) to support the desired level of service, or , in the alternative, a reduction in the number of customers served.

An inefficient application can cause further adverse impacts on quality of service. For example, a user of an inefficient application located at a cell edge will require not only additional bits to support the application, but also additional power relative to a more efficient service. The additional power requirements will limit power available to other users, possibly subjecting those users to higher levels of interference.

Improvements in the accommodation of third party applications should be explored. Specifically, within the wireless environment, third party applications should be integrated within lower levels of standardized protocol stacks so as to enable efficient delivery of the services they provide. For example, the identification of a VoIP call to these lower levels would allow the compression/suppression of IP headers, significantly improving the efficiency with which the voice packets can be transported over the air. Such arrangements, to the extent they are not already identified in standards, can be pursued in existing standards bodies.

A. Skype Erroneously Claims That Carriers Practices Are Not In The Public Interest.

In its petition, Skype erroneously claims that "carriers are engaging in restrictive practices that are not in the public interest."[19] The public and consumer interest requires carriers to ensure spectral efficiency, recognize and resolve security vulnerabilities, boost performance, and identify and eliminate interference caused by both bandwidth-intensive applications and noncompliant or malfunctioning devices. These "restrictive practices" are carried out with the goal of maintaining a level of quality of service for consumers. This level of quality would be reduced if carriers were forced to eliminate the screening of devices that attach to their network and applications that run on their network. [20]

Carriers employ handset certification procedures because they operate on a shared, finite amount of spectrum. Every device and every cell site operating on the network has a measurable impact on the shared spectrum available to all consumers attempting to access the network in a given geographic area.[21] An unauthorized wireless device that fails to operate as planned may result in fewer connections per cell site, as well as cause harm to users of competing networks on adjacent frequencies.[22] Further, carriers

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[19] Skype Petition at 13.
[20] *See* LG at 5; AT&T at 41-44; VzW 33-34; CTIA Attachment C at 24; ITI at 4-5.
[21] VzW at 33-34; CTIA at 38; Moto at 8; AT&T at 21-22.
[22] LG at 5.

must be able to detect interference problems and issues with location distortion cause by unauthorized attachments such as repeaters.[23]

Additionally, as multiple filers point out, the *Carterfone* Principle and the subsequent Part 68 rules were premised on the conclusion that consumer use of CPE would only risk degradation of their own service and not the services received by other subscribers on the network. Therefore, consistent with Commission's reasoning in Part 69 of its rules where it declined to establish standards for attaching devices to "party lines," the spectrum sharing that underlies wireless service renders the *Carterfone* principle inapplicable as a practical matter.[24]

B. Skype Seeks To Overreach and Extend The *Carterfone* Doctrine To Run Applications Via Its Devices Over The Wireless Network.

In addition to the *Carterfone* policy, Skype seeks to run applications of its choosing over devices attached to the network.[25] In order to ensure a level of quality of service for all consumers, wireless providers must ensure that applications loaded onto wireless devices do not interfere with the proper operation of the device or harm the network.[26] Carriers have adopted usage policies and industry practices to effectively manage shared wireless resources and maximize efficiency. These policies and practices prevent

[23] CTIA at 42; Moto at 9; Qualcomm at 13.
[24] CTIA at 38-39; Moto at 8; AT&T at 41-44.
[25] Skype Petition at 17-18
[26] *See* VzW Attachment C at 1-3, 7-10.

subscribers' use of bandwidth-intensive applications from undermining the quality of service and bandwidth available to other subscribers.[27]

ALU agrees with multiple filers that carrier' practices concerning attaching devices to their network and running applications on those devices over the network serve to protect consumers, and in fact have enhanced consumer welfare.[28] The Skype Petition overlooks the fact that wireless carriers are functioning in a free economy with multiple competing networks, including Skype's. In this market structure, consumers benefit from providers competing to offer different service plans, investing to upgrade their networks, offering customers a wide array of handset choices, aggressively deploying 3G networks, and developing -- on their own or with partners -- innovative services to ride over that network.[29] If these practices do harm consumers, as Skype claims,[30] then the consumer will simply choose another carrier.[31]

The trends outlined in the *Eleventh Competition Report*, and the consequential consumer welfare, are a direct result of the deregulatory approach the Commission and Congress have taken with the wireless industry.[32] The absence of market failure is detrimental to Skype's plea for

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[27] AT&T at 17; Moto at 11-12; CTIA at 40; CTIA Attachment E at 24; AT&T at 60-61; Qualcomm at 12.
[28] AT&T at 5.
[29] USCC at 5; AT&T at 7, 17-22, 30-33.
[30] Skype Petition at 13.
[31] VzW at 6.
[32] AT&T at 8; USCC at 4; Moto at 4-5.

regulation and oversight. ALU agrees with multiple filers and the Commission itself that the Commission should only "step in and take action" where there are "market failures."[33] Therefore there is no credible basis for mandating the pervasive regulations Skype seeks. Skype is seeking regulation to "fix" a problem that simply does not exist in today's wireless industry.

IV. Impact of a Mobile VoIP Provider on a Wireless Service Provider's Broadband Network.

According to an internal study conducted by Bell Labs, if Skype's proposed regulations are imposed, wireless service providers will experience a loss of voice revenues, and combined with the cost of supporting additional VoIP traffic or any other application for that matter, it is likely to leave them with an unsustainable business model. Our study found that wireless service providers will likely increase prices of their data only offer to recover additional costs of VoIP traffic to remain competitive. However they still are likely to lose higher end voice user revenues. If no regulations are imposed, wireless service providers are likely to bundle their voice and data services and offer it at a competitive price driven by market forces.

Further, unplanned increased data usage from unprovisioned VoIP and other applications will significantly impact wireless service providers capitol expenditure and operating costs. A megabyte of VoIP traffic, and

[33] AT&T at 2, 36-40; VzW at 7.

especially other bandwidth intensive applications, will have a greater impact than a megabyte of typical internet data traffic such as web-browsing or email.

V. Conclusion

The Commission must refrain from mandating any new regulations that would impede innovation at any layer of the wireless network. In addition, the wireless broadband market is nascent with significant investment and innovation at every layer of the network. Applying the *Carterfone* principle, intended for a monopoly market, to the competitive wireless broadband industry would stifle investment and innovation in network infrastructure and slow down the rapid standards process that provides the structure for the deployment of wireless broadband. For the aforementioned reasons stated herein, the Commission should deny Skype's Petition.

Respectfully Submitted,

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